



Australian Government  
Department of Industry



Ethnic Communities'  
Council of NSW inc.

**BEST**

BUSINESS ENERGY SMART TIPS



# Improving the energy use of small business refrigeration

**For most small businesses refrigeration is a major investment and replacing existing cool rooms and fridges with energy efficient alternatives is only possible when it breaks down.**

Most businesses also know that refrigeration running costs are a major part of the electricity bills. These costs can be reduced by making small changes in how refrigeration is used and maintained.

## How refrigeration uses energy

Managing refrigeration energy costs means managing the flow of the refrigerant gas around the refrigeration system. The key parts that need to be working efficiently are:

- ✓ the compressor - the electric pump that moves the gas around and uses 40-60% of energy
- ✓ the condenser coils - that cools the gas and has fans that use 10-20% energy
- ✓ the evaporator coils - that cools the fridge air and has fans that use 10-20% energy
- ✓ lights and defrost heaters using 10-20% energy

Understanding how to increase the energy efficiency of these components saves you money.

## Correct placement of fridges and freezers saves money

Ensure condensers have good cooling air flow.

Make sure fridges and freezers are at least 10-15 cm from the wall.

Try to arrange the business floor layout so that fridges and freezers are located in the coolest part of the building and away from heat sources such as food heating/cooking equipment and direct sunlight.



*Keep the airflow cool outside*



*Position fridges and freezers near a breeze*

Do not stack items that might obstruct air flow close to fridges, freezers or cool rooms.

Check that temperature sensors in cool rooms are in a suitable, accessible location and that they do work (check with another thermometer).

## Regular maintenance and management saves energy and money

Clean dirty or dusty condenser fins and coils to improve energy use by 5–7%. Use a broom or brush only. Do not use water or cleaning products as this will corrode the metal. Blocked or deteriorated coils do not transfer heat well. Condensing temperatures rise when coils are fouled/damaged.

**Increasing condensing temperature by 3°C increases power use by 10%.**

If any fridges contain only non-perishable items, install a timer to reduce running time after hours.

Consider consolidating fridges if some are not full or not used all the time.

Check when the defrost cycles occur for your cool rooms, and consider reducing or moving to off-peak times to save money. Check first with the manufacturer's recommendations or your refrigeration specialist for the best timing of cycles.

Check to see if your fridge requires physical defrosting. Fridges that require defrosting should be done 2 to 3 times per year. Defrosting maintains the efficiency of the refrigeration unit and saves money.

**Perform scheduled maintenance on fridges.**

Adjust door latches and replace worn door seals. Check refrigeration seals often, inspecting the seals for cracks and signs of wear, particularly at the bottom of the door. Seals in poor condition allow cool air to escape, using higher energy use.

Ensure that your fridges have the correct refrigerant charge as too little or not enough makes the compressor work harder.

## Maintain the temperature and moisture to save money

Install automatic door-closers and strip curtains on walk-in freezers or coolers.

Cover glass topped freezers and fridges with lids or insulated soft covers overnight or when not in use. Overnight covers cost around \$100 – \$300.



*Clean dirty or dusty condenser fins*



*Install strip curtains*

Upright display freezers and cases can also have doors or soft covers fitted each night. Use Velcro strips for quick and easy use of soft covers.

Reduce cold-air loss from fridges and freezers by placing reminder notices up to remind staff to close freezer and refrigerator doors after use.

Reduce cold air loss from fridges and freezers by installing a beeper to alert staff when doors are left open or fit curtains to walk-in units at a cost of between \$100-\$500.

**Apply anti-fog coatings to the inside of fridge doors costing around \$30-\$50.**

This reduces the need for the anti sweat heaters and saves up to 33% on energy costs. Anti-sweat heaters prevent condensation from forming on the windows so customers can see the products inside the cabinets and cases. Contact a refrigeration mechanic or window treatment specialists for assistance to supply and install this type of product.

## Lighting

Use Light Emitting Diodes (LED) lights as they have a long life, especially in cold environments.

LED lights use less power than fluorescent lights.

LED lights emit less heat into the cold space, reducing the refrigeration load.

## Replace equipment

Check with your refrigeration specialist if your cool room has an EC fan (or known as Electronically Commutated fans). If not, consider replacing your existing fans with these newer type of fans, as they use less energy.

**EC fans consume about 30% less electricity than a conventional AC fan.**

Choose energy and water efficient models when buying new appliances.

Information on energy efficient domestic refrigeration and freezers, often used in small businesses, can be found at: [http://reg.energyrating.gov.au/comparator/product\\_types/](http://reg.energyrating.gov.au/comparator/product_types/).

The higher the star rating, the less cost to run the equipment.



*Reduce cold air loss by installing night blinds*



*Anti-fog coatings can save up to 33% on energy costs*



*LED lighting*



There are many new more energy efficient systems now available including:

- ✓ Liquid pressure amplification
- ✓ Electronic expansion valves
- ✓ Condensate evaporation with waste heat
- ✓ CO2 and Glycol systems
- ✓ Condenser and evaporator selection
- ✓ Variable head pressure control
- ✓ Water cooling.

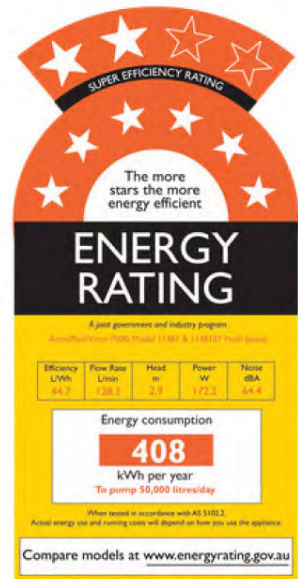
Finding commercial energy efficient refrigeration is challenging. When purchasing new commercial refrigeration, ask about the running costs as well as the capital cost.

Look for an installer who knows about saving you energy costs.

## Beware of 'quick fix' solutions

There are many 'quick fix' solutions to energy costs and refrigeration that will cost money and will probably not work. Ask the vendor the following questions:

- ✓ Are you sure that it does not affect any warranties, e.g. for compressors?
- ✓ Can the vendor provide performance results certified by an industry-recognised certifying body?
- ✓ Has the system been included in the standard specifications of the major retailers?
- ✓ Can the vendor provide exact savings figures for your application?
- ✓ Can the vendor provide an engineering tool to calculate the savings?
- ✓ Does the vendor offer a full cash refund if not satisfied or savings are not proven?



*Check the energy star rating label when buying new smaller fridges and freezers*

## Refrigeration advice - Who can assist?

For larger commercial refrigeration systems, a refrigeration specialist may be able to help with giving you information on energy efficiency ratings of new equipment. Your local commercial refrigeration mechanic can provide refrigeration assistance. Sources for businesses to obtain further advice, quotes and supplies, can be found at the following organisations:

NSW Refrigeration association and suppliers

[www.raccansw.asn.au](http://www.raccansw.asn.au)

Victorian Refrigeration association and suppliers

[www.raccavic.asn.au](http://www.raccavic.asn.au)